REMARKS

This is a full and timely response to the non-final Office action mailed April 28, 2005. Reexamination and reconsideration in view of the foregoing amendments and following remarks is respectfully solicited.

Claims 1, 2, 5-7, 9-12, 14-16, 18-23, 25, 26, 28-31, 33, 34, 36-38 are pending in this application, with Claims 1, 12, 21, 31 being the independent claims. Claims 1, 9, 12, 14, 21-23, 28, 31, 36 have been amended, Claims 3, 4, 8, 13, 17, 24, 27, 32, 35 have been canceled. No new matter is believed to have been added.

Rejections Under 35 U.S.C. § 102

Claims 1-10, 12-14, 17-19, 21-24, 27, 28, 31, 32, 35, 36 and 37 were rejected under 35 U.S.C. § 102 as allegedly being anticipated by U.S. Patent No. 6,098,011 to Scott, hereinafter Scott. The Examiner stated that Scott discloses a fault detection system for detecting faults in an aircraft system, where the fault detection system includes a sensor data processor providing an augmented data set and a logic inference system, the logic inference system analyzing the augmented data set to determine the likelihood that a fault has occurred. Specifically, the Examiner cited errors 28 and 38, described in column 3, lines 1-65 of Scott, in stating that Scott teaches a system that determines a likelihood that a fault has occurred. Applicants respectfully disagree and submit that Scott does not disclose a fault detection system as claimed. Furthermore, applicants have amended independent claims 1, 12, 21 and 31 to further distinguish over the cited Scott reference. Thus, this rejection is respectfully traversed.

First, applicants note that the claimed invention is directed toward a system and method of detecting fault in a turbine engine. As such, the system and method receives sensor data from the turbine engine, and uses that sensor data to determine the likelihood that a fault has occurred in the turbine engine. In contrast, the system described in Scott is not for fault detection. Instead, the system described in Scott is used to arbitrate

between two sensed values. See the abstract of Scott. As described in Scott, the system is thus used to determine a single value for sensor from multiple sensors. See column 3, lines 52-62, which describes how the system is operable to generate a single output value from multiple sensors. The resulting output is then submitted to the primary engine control algorithms for processing. For example, the output is used in the control of actuators on the engine. See FIG. 1 of Scott, as one example. Thus, the system described in Scott is not a fault detection system, nor is it in any way used to determine the likelihood of a fault in a turbine engine.

In the office action, the Examiner cited errors 28 and 38, described in column 3, lines 1-65 as evidence that Scott is used to determine the likelihood that a fault has occurred. Applicants respectfully submit that this is a mischaracterization of the Scott reference. Specifically, applicants submit that errors 28 and 38 in Scott instead refer to differences between sensor values. For example, in column 2, line 62, to column 3, line 20, error 28 is described as the difference between sensor A and sensor B, and error 38 is described as difference between the synthesized value and the MAX between sensor A and sensor B. Thus the errors 28 and 38 are not outputs used to indicate likelihood of fault in the turbine engine.

Furthermore, applicants note that errors 28 and 38 cited by the Examiner are not outputted or generated by the fuzzy logic system. Instead, errors 28 and 38 are inputted to the fuzzy logic algorithm 40, which uses them to arbitrate between sensed values, creating a single output value 58 for use as the parameter in question. See FIG. 2 and column 4, lines 32-44 of Scott. Thus, errors 28 and 38 do not show a fuzzy logic inference system or method being used to determine the likelihood that a fault has occurred in the turbine engine.

Furthermore, applicants have amended the independent claims to further distinguish over the cited references. For example, applicants have amended claim 1 to

recite that the sensor data processor generates "residuals from the sensor data" and determines "a rate of change of the residuals". As another example, applicants have amended claim 1 to recite that the fuzzy logic inference system "includes a plurality of membership functions and wherein each of the plurality of membership functions is associated with at least one data type in the augmented data set, and wherein the fuzzy logic system fuzzifies the augmented data set using the plurality of membership functions". Similar amendments have been made to independent claims 11, 21 and 31. These amendments further distinguish over Scott by clarifying the operation of the sensor data processor and the fuzzy logic inference system as they are used to determine the likelihood that a fault has occurred in the turbine engine.

Rejections Under 35 U.S.C. § 103

Claims 1, 2, 6, 7, 10-12, 16, 17, 20-22, 26, and 27 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Scott in view of Ling (U.S Patent No. 5,718,111). In this rejection, the Examiner admitted that Scott did not disclose the use of specifically recited sensors in those claims. However, the Examiner then stated that Ling discloses the use of these sensors in a turbine engine. Applicants respectfully disagree. While Ling does teach the use of the various sensors, applicants submit that Ling, like Scott, fails to teach the use of these sensors in a fault detection system used to determine the likelihood that a fault has occurred in the turbine engine. Thus, applicants again submit that the independent claims are patentably distinct over the cited references.

Conclusion

Based on the above, independent Claims 1, 11, 21 and 31are patentable over the citations of record. The dependent claims are also submitted to be patentable for the reasons given above with respect to the independent claims and because each recite features which are patentable in its own right. Individual consideration of the dependent claims is respectfully solicited.

The other art of record is also not understood to disclose or suggest the inventive concept of the present invention as defined by the claims.

Hence, Applicant submits that the present application is in condition for allowance. Favorable reconsideration and withdrawal of the objections and rejections set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

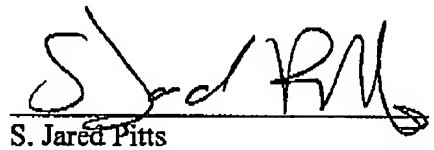
If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

If for some reason Applicant has not paid a sufficient fee for this response, please consider this as authorization to charge Ingrassia, Fisher & Lorenz, Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

INGRASSIA FISHER & LORENZ

Dated: 27 July 2005

By: 

S. Jared Pitts
Reg. No. 38,579
(480) 385-5060